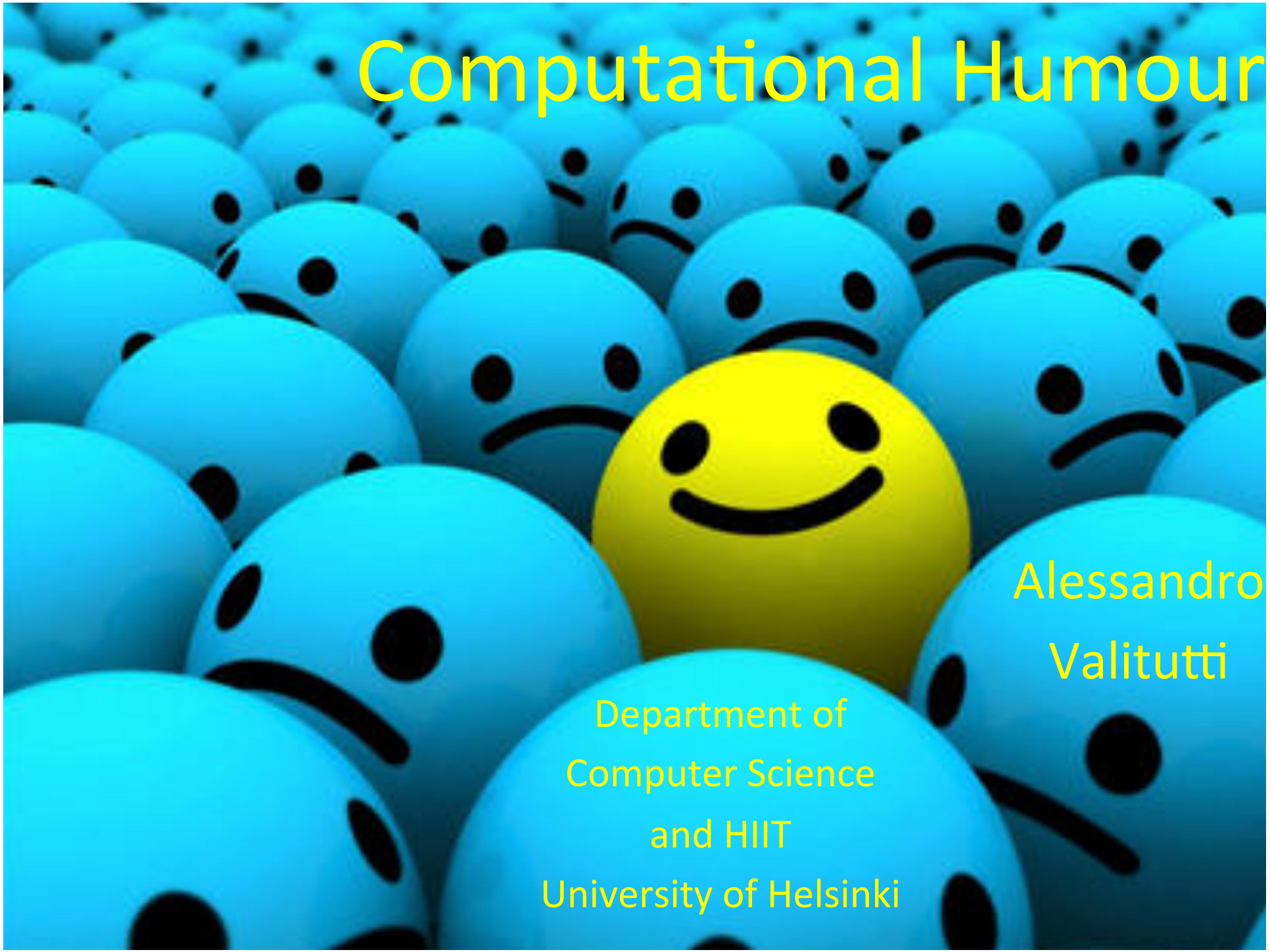
Computational Humour



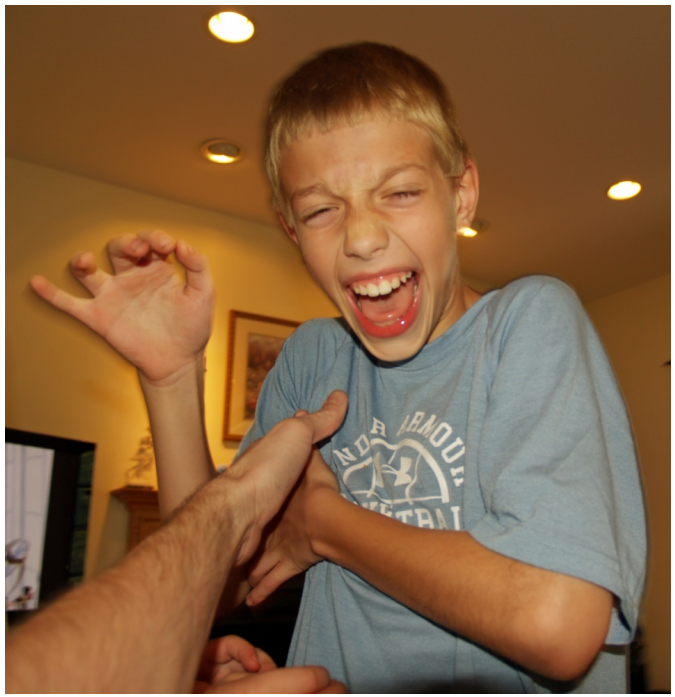
Alessandro Valitutti

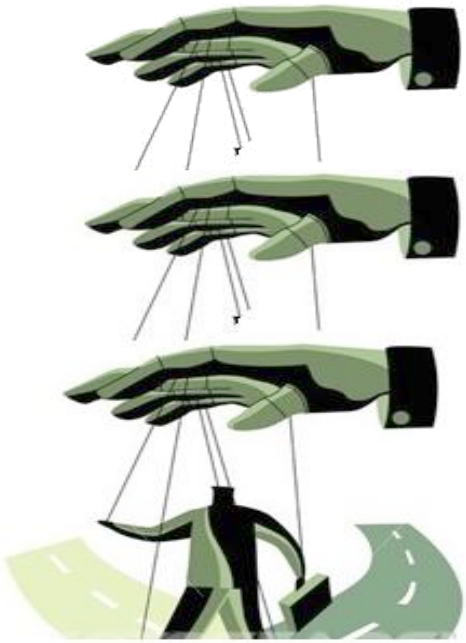
Department of Computer Science and HIIT
University of Helsinki

Outline

- Humor and Computational Treatment
- Humor and Ambiguity
- Double-Edged WordNet
- Research Directions

Humor: tickling through the language

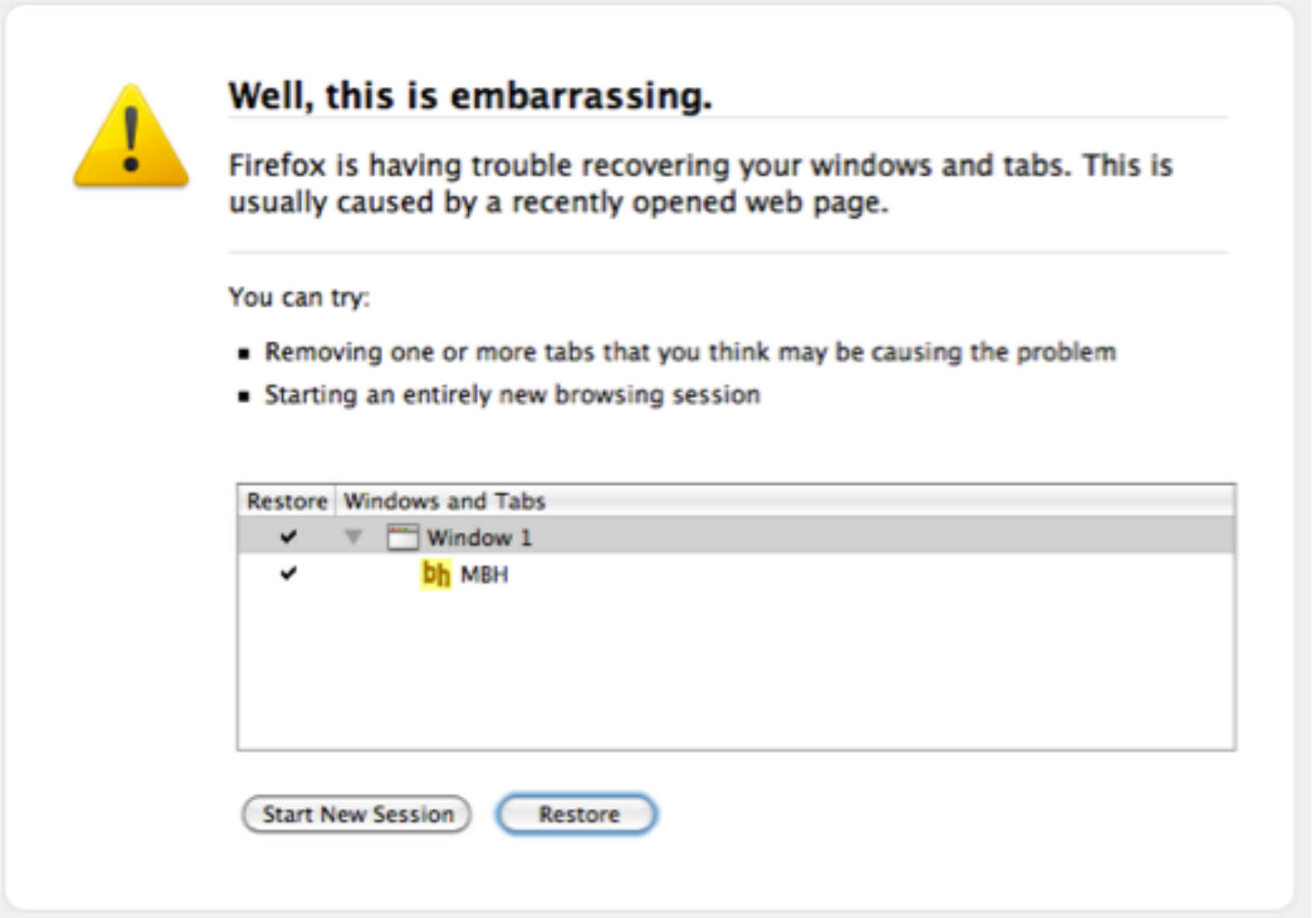




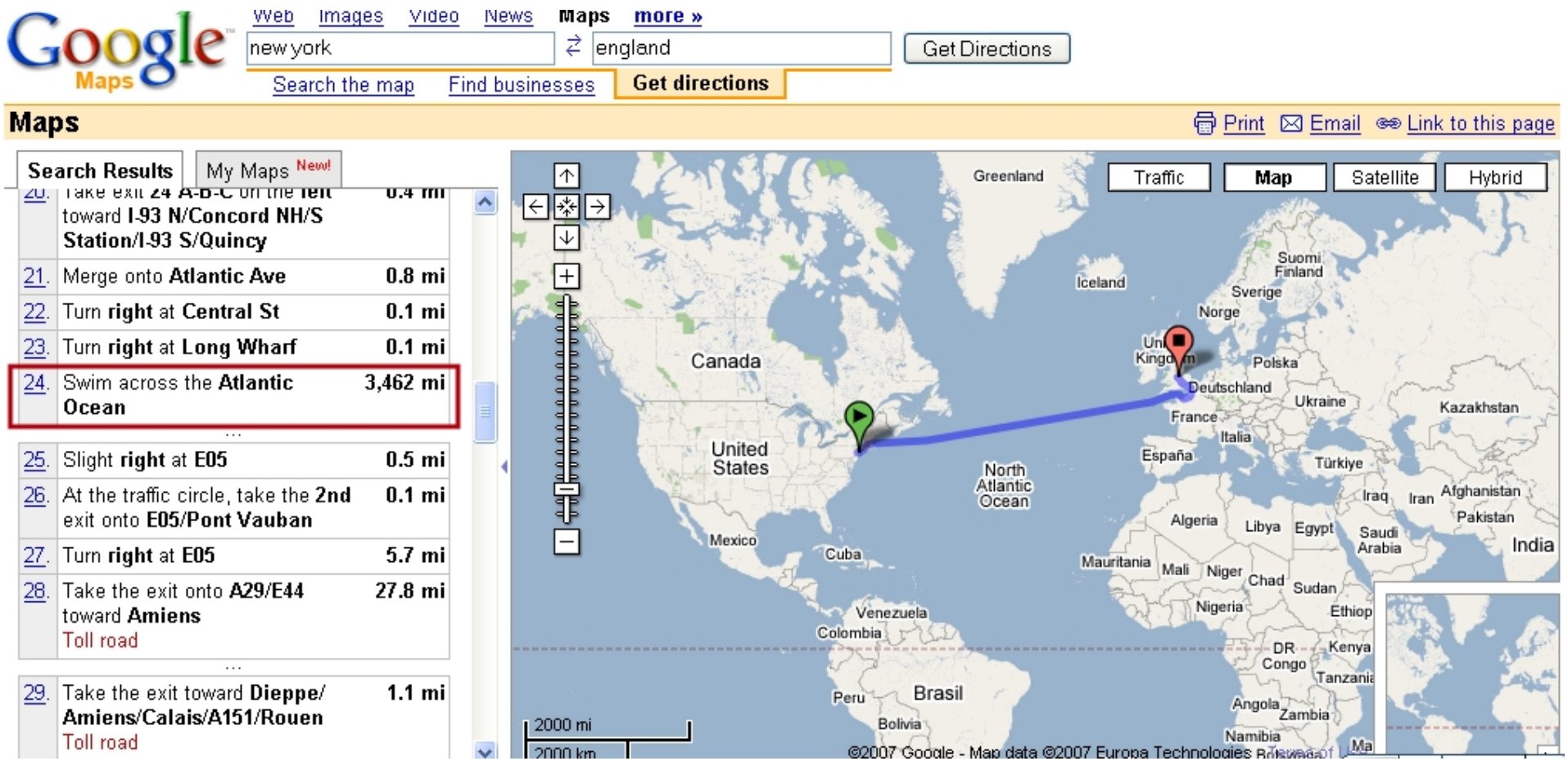
Work Context

- Emotion (mirth)
- Causality (emotional induction – humorous effect)
- Intentionality (intentional humor)
- Verbal modality (verbal humor)
- Word level (lexical humor)
- Non-Interactivity (modeling of expectations from common sense knowledge)

Humor in Computers (1)



Humor in Computers (2)



Computational Humor

1. Humor studies, computational simulation of human humor
2. Computer-aided humor creation
3. Machine humor
   - Automatic humor recognition
   - Automatic humor generation

Computational Humor Generation

- Ritchie, Binsted
  - linguistic analysis of jokes [2004]
  - punning riddle [Binsted and Ritchie, 1994]
  - e.g.: "What do you call a murderer with fibre? A cereal killer."
- Stock, Strapparava
  - large scale lexical resources, semantic relations, creative variations
  - funny hacronyms [2003]
  - e.g.: "MIT = Mythical Institute of Theology"
- Nijholt, Tinholt
  - humorous agents: interaction, appropriatedness, humorous acts
  - anaphorical puns [2004]
  - e.g.: "Mary asked Susan a question, and she gave the answer" "Did Mary give the answer?"

Familiar Expression Variation (FEV)

- Familiar expressions are sentences or phrases from the common sense knowledge (e.g. proverbs, movie titles, idioms).
- The variation consists of the substitution of a word in the original expression with a phonetically similar word.
- The pun generation is reduced to lexical selection.

Examples of FEV

crash → Saturday Fright Fever

surgery → Back to the Suture

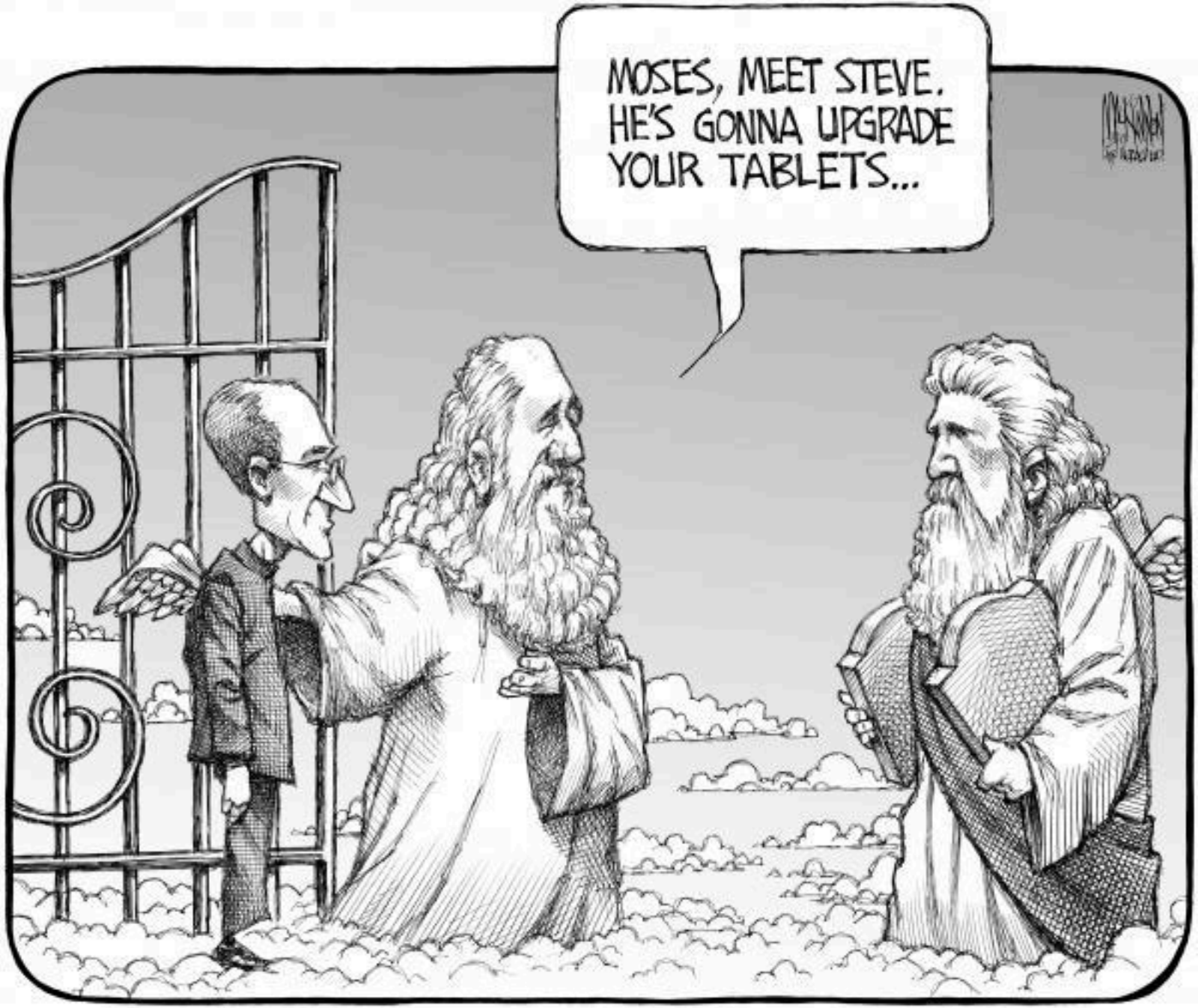
dentist → Fatal Extraction

Research Questions

1. To what extent it is possible to control the humorous effect through lexical manipulation?
2. To what extent it is possible to model people expectations through common sense knowledge extracted by corpora?
3. To what extent data mining and link discovery strategies allows us to improve lexical humor?

Key Claims

1. Humor creation starts from the discover of a funny connection (humorous "seed")
2. There are two types of creativity in humor generation: heuristic and narrative creativity
3. Most of humorous seeds are based on some form of linguistic ambiguity
4. The first step for taking control of verbal humor generation is in the manipulation of lexical ambiguity


MOSES, MEET STEVE. HE'S GONNA UPGRADE YOUR TABLETS...

FORTUNE -- The morning after the announcement that the legendary innovator and former Apple CEO, Steve Jobs, had died, crowds at all four of New York City's Apple Stores

The shop must go on.

Raining cats and dogs

Double-Edged WordNet (1)

A double-edged word is defined by the following conditions:

1. Word with two or more meanings
2. The meanings have different weights (at least a default and a hidden/secondary meaning)
3. The default meaning is not funny/relevant
4. The hidden/secondary meaning is funny/relevant

Double-Edged WordNet (2)

- Items are defined according to three different possible types of lexical ambiguity:
  - Homonymy is defined as the relation between words that share the same spelling and pronunciation but have different meanings (e.g. tablet)
  - Homophony is defined here as the relation between words that are phonetically identical (complete homophones) or similar (partial homophones) but with different spelling (e.g. show/shop).
  - Idiomatic ambiguity is a specific type of ambiguity between literal and figurative language. Idioms are defined here as multiword expressions whose meaning cannot be inferred by the meaning of the component words. The idiomatic meaning of a word is the meaning associated to the idiom in which the word is included. (e.g. cat/rain)

Applicative Examples

- Punning riddles:
  - *What is a pig? It is a stout-bodied short-legged omnivorous policeman.*
  - *Who is a working girl? A young streetwalker who is employed.*
- Funny acronyms:
  - *CPU = Central Processing Unit*

    ➔ *Celibate Professing Untied*
- Variation of familiar expressions
  - *A chapel a day keeps the malefactor away.*
  - (*An onion a day keeps everyone away.*)

Conclusions

- Exploration of the connection between computational humor and automatic discovery
- Distinction between heuristic creativity and narrative creativity
- Definition of a model of lexical ambiguous terms
- Development of a lexical resource of ambiguous terms, indexed according to semantic dimensions "relevant" for creative/humorous generative tasks.
- Integration of existing humor generators

Future Work

1. Data mining and discovery of ambiguity
   - Background Knowledge Graph
   - Bisonet
   - NLP tools for Word Sense (Dis)ambiguation
2. Propagation to higher levels:
   - Phrase
   - Sentence
   - Pragmatics
3. Interactivity
4. Multimodality
5. Humor generation as a form of creative design

Possible Application

Idiosyncratic misunderstander

- Dialogue system
- Word spotter
- Auto-completion

The secret to creativity is knowing how to hide your sources. – Albert Einstein